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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/669,556	09/26/2000	David E. Simmen	ST9-99-184	4709

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EXAMINER

NGUYEN, CINDY

ART UNIT

PAPER NUMBER

2171

DATE MAILED: 01/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/669,556

Applicant(s)

SIMMEN, DAVID E. 

Examiner

Cindy Nguyen

Art Unit

2171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,3-11,13-21 and 23-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-11,13-21 and 23-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)              | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

This is in response to amendment filed on 11/25/2002..

### ***1. Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**2. Claims 1, 3-7, 11, 13-17 and 21, 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schiefer et al. (U.S. 5761653) (Schiefer) in view of Subramanian et al. (U.S. 6275818) (Subramanian).**

Regarding claim 1, Schiefer disclose: a method of optimizing execution of a query that accesses data stored on a data store connected to a computer (see 10, fig. 2 and corresponding text, Schiefer), comprising: using the generated cardinality estimates to determine an optimal query execution plan for the (see col. 3, lines 37-60, Schiefer). However, Schiefer didn't disclose: generating cardinality estimates for one or more query execution plans for the query using statistics of one or more automatic summary tables that vertically overlap the query. On the other hand, Subramanian disclose: generating cardinality estimates for one or more query execution plans for the query using statistics of one or more automatic summary tables that vertically overlap the query (col. 18, lines 31-60, Subramanian). Thus, at the time invention was made, it would have been obvious to a person of ordinary skill in the art to include the step of

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generating cardinality estimates in the system of Schiefer as taught by Subramanian. The motivation being to enable the user to generate accurate cardinality estimates for complex predicates and reduce the number of record in the database.

Regarding claims 11 and 21 in particular, all the limitations of these claims have been noted in the rejection of claim 1 above. In addition, Schiefer/ Subramanian discloses a memory store and at least program (see 10 and 30, fig. 2 and corresponding text, Schiefer).

Regarding claims 3, 13 and 23, all the limitations of these claims have been noted in the rejection of claims 1, 11 and 21 above. In addition, Schiefer/ Subramanian disclose: wherein the statistics of the one or more automatic summary tables are used to improve a combined selectivity estimate of one or more predicates of the query (see col. 6, lines 41 to col. 7, line 20, Schiefer).

Regarding claims 4, 14 and 24, all the limitations of these claims have been noted in the rejection of claims 3, 13 and 23 above. In addition, Schiefer/ Subramanian disclose: wherein the predicates are applied by one of the automatic summary tables (see col. 10, lines 23-44, Schiefer).

Regarding claims 5, 15 and 25, all the limitations of these claims have been noted in the rejection of claims 4, 14 and 24 above. In addition, Schiefer/ Subramanian disclose: wherein the selectivity estimate comprises a ratio of a cardinality of the automatic summary table to a product of cardinalities of base tables referenced in the automatic summary table and the query (see col. 8, lines 1-28, Schiefer).

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Regarding claims 6, 16 and 26, all the limitations of these claims have been noted in the rejection of claims 3, 13 and 23 above. In addition, Schiefer/ Subramanian disclose: wherein zero or more predicates of the query are applied by one of the automatic summary tables and wherein the remaining predicates are eligible to be applied on the automatic summary table (see col. 17, lines 32-41, Subramanian). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to include the techniques of query as taught by Subramanian, in the system of Schiefer. The motivation being to enable users to determine a most efficient execution plan for reducing the number of records data along with an estimate of the corresponding system for executing the query.

Regarding claims 7, 17 and 27, all the limitations of these claims have been noted in the rejection of claims 6, 16 and 26 above. In addition, Schiefer/ Subramanian disclose: wherein a predicate is eligible to be applied on the automatic summary table if it can be evaluated using the output columns and expressions of the automatic summary table (see col. 17, lines 42-51, Subramanian).

**3. Claims 8-10, 18-20 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schiefer et al. (U.S. 5761653) (Schiefer) in view of Subramanian et al. (U.S. 6275818) (Subramanian) and further in view of Raitto et al. (U.S. 5991754) (Raitto).**

Regarding claims 8, 18 and 28, all the limitations of these claims have been noted in the rejection of claims 7, 17 and 27 above. However, Schiefer/ Subramanian didn't disclose: further comprising determining a subpredicate combined selectivity estimate of the unapplied eligible predicates using column distribution statistics of the automatic summary table. On the other hand, Raitto disclose:

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further comprising determining a subpredicate combined selectivity estimate of the unapplied eligible predicates using column distribution statistics of the automatic summary table (see col. 11, lines 6-19, Raitto). Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to include determining a subpredicate combined selectivity estimate of the unapplied eligible predicates using column distribution statistics of the automatic summary table as taught by Raitto, in the combination system of Schiefer/ Subramanian. The motivation being to enable users to determine a most efficient execution plan for reducing the number of records data along with an estimate of the corresponding system for executing the query.

Regarding claims 9, 19 and 29, all the limitations of these claims have been noted in the rejection of claims 8, 18, and 28 above. In addition, Schiefer/ Subramanian/Raitto disclose: wherein a cardinality ratio comprises a ratio of a cardinality of the automatic summary table to a product of cardinalities of base tables referenced in the automatic summary table and the query (see col. 11, line 20-30, Raitto).

Regarding claims 10, 20 and 30, all the limitations of these claims have been noted in the rejection of claims 9, 19 and 29 above. In addition, Schiefer/ Subramanian/Raitto disclose: wherein the selectivity estimate comprises a product of the subpredicate combined selectivity estimate and the cardinality ratio (see col. 11, lines 31-49, Raitto).

#### **4. *Response to Amendment***

Applicant's arguments have been considered, but are moot in view of the new ground(s) of rejection.

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**5. Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chiang (U.S 6477523). Selectivity prediction with compressed histograms in the parallel processing database system.

**6. Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cindy Nguyen whose telephone number is 703-305-4698. The examiner can normally be reached on M-F: 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

*CN*

Cindy Nguyen  
January 9, 2003

  
**SAFET METJAHIC**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2100**